WOOL POLICY IN THE UNITED STATES: ITS DIRECT IMPACT ON AUSTRALIAN EXPORTS

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Australian apparel wool exports to the United States are less than they might be because of two protective policies of the U.S. government: a fixed tariff and a system of direct price-support payments to U.S. wool ᵢ producers. Dismantling these policies, though difficult, could mean $10 million to $21 million worth of additional Australian wool sales to the United States, over 1966 levels. Most of the increase would come from tariff cuts. Such amounts are worth negotiating for but would not solve the industry's problems.

In recent years, wool producers in the United States have supplied a dwindling proportion of that country's rising consumption of raw apparel wool. Accordingly, imports have increased from 43 per cent of consumption in 1956 to 57 per cent in 1966.[1] Australia now supplies about 40 per cent of this import market. However, imports of raw apparel wool are less than they might be because of two separate protective policies pursued by the U.S. government.[2]

The first is a fixed tariff on each pound of apparel wool imported.[3] The effect of this measure is to raise internal U.S. market prices above international levels. The second is a system of direct payments to U.S. producers designed to cover the difference between average prices received in the market and higher support rates.[4] The combined effect of these two measures is to reduce imports below free market levels by (1) reducing the amount of raw wool demanded by users through higher market prices, and (2) increasing the amount supplied domestically through higher levels of farm price support.

Any change in U.S. wool policy towards freer trade could benefit Australian wool growers and traders. The objectives of this paper are

* This paper was written while the author was a Thomas Lawrence Pawlett Visiting Scholar in the Department of Agricultural Economics, University of Sydney. K. O. Campbell, B. R. Davidson, and J. W. Longworth offered helpful comments and suggestions, but the author retains full responsibility for the contents.

[1] The empirical data used in this paper are from various issues of *The Wool Outlook*, Bureau of Agricultural Economics, Canberra; *Wool Situation*, Economic Research Service, U.S. Department of Agriculture, Washington, D.C.; and *Monthly Review of Business Statistics*, Commonwealth Bureau of Census and Statistics, Canberra. Australian monetary values are used throughout this paper ($A 1.00 = $U.S. 1.12).

[2] The usual distinction between apparel wool and carpet wool is drawn in this discussion. The United States imports virtually all its carpet wool needs. These imports are duty free. Tariffs apply to apparel wools which compete with domestic U.S. production.

[3] *Tariff Schedules of the United States*, Schedule 3, Part I.

[4] *The National Wool Act of 1954*, Public Law 690, Title VII, 83rd Congress, 2nd Session, August 28, 1954.

twofold; first, to provide a simplified analytical picture of the U.S. wool market with emphasis on the protective elements of national policy, and second, to present some estimates of the net impact on total and Australian wool shipments to the United States which would follow dismantling of all or part of the protective system. Hopefully, these results will facilitate the continuing discussion about U.S. wool policy and its implications for Australia and other wool exporters.

Analytical Framework

The central features of U.S. wool policy can be presented in the familiar partial equilibrium framework of economic theory. In Figure 1, curve DD is the annual wholesale demand for raw apparel wool by mills and other users in the United States.[5] It is the schedule of quantities demanded at various average wool prices when all other prices, tariffs, and external influences are held constant. Similarly, the curve SS shows the amounts of apparel wool offered by U.S. sellers at the same marketing level, all else held constant. The slope and position of each curve is illustrative only. No implication of elasticity or relative market size is intended in Figure 1.
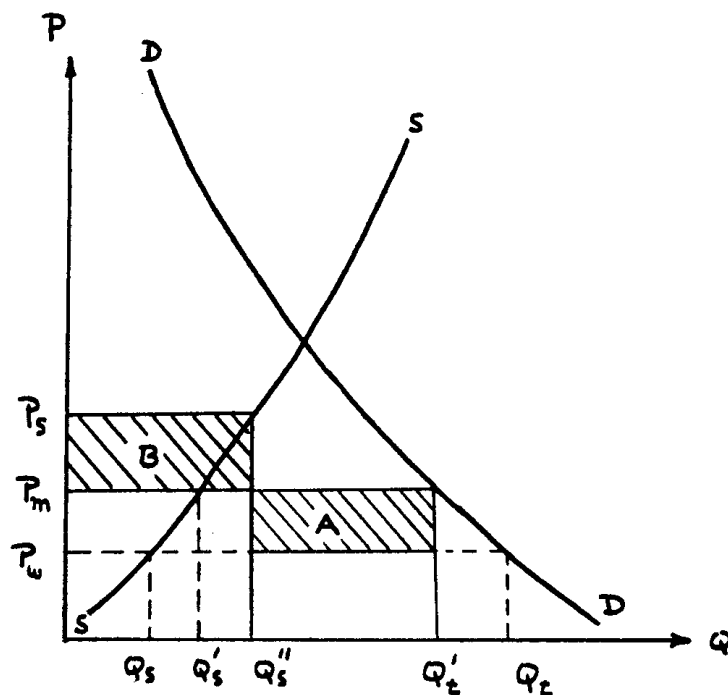

Fig. 1—Annual wholesale demand and supply of raw apparel wool in the U.S.

Since the United States currently purchases less than 10 per cent of the world's raw wool exports, it is assumed that, within the relevant range, the United States cannot affect international wool prices by

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5 It is assumed here that raw apparel wool is a homogeneous commodity.

B

altering its imports.[6] Hence, the international price of wool is given for U.S. buyers and is shown as P_w in Figure 1. Under a free trade regime in wool, buyers would demand Q_t and domestic sellers would offer Q_s, leaving $Q_t - Q_s$ as the volume imported at the international price of P_w.

Now consider a fixed tariff, indicated by t, applied to all imports. This tariff will push up imported wool prices on the internal U.S. market. Prices of wool produced in the United States also will be bid up until a new higher internal price is established. This price will differ from P_w by the amount t and is indicated as P_m in Figure 1. At P_m, the amount demanded drops from Q_t to Q'_t, but the amount supplied domestically increases from Q_s to Q'_s. Imports will be smaller at $Q'_t - Q'_s$. Tariff revenues will be equal to the amount t multiplied by the imported volume.[7]

Next, consider the impact of a direct payments system which increases effective prices to U.S. producers above the tariff-burdened internal market prices. Assume that the direct payments are designed to bring U.S. producer prices up to a previously-established support rate, P_s. In Figure 1, P_s reflects producer prices adjusted to the appropriate wholesale marketing level. The internal market price is P_m. The difference $P_s - P_m$, is covered by direct payments on all domestic output. Producers, confident of receiving P_s, will supply Q''_s. Buyers, still able to deal at P_m, will purchase Q'_t. Imports will shrink to $Q'_t - Q''_s$. Under current legislation, U.S. wool tariffs (area A in Figure 1) are used to finance the direct payments to growers (area B).

Dismantling U.S. wool protection could be accomplished by (1) lowering the tariff with the payment scheme left intact, (2) lowering the direct payments with the tariff being maintained, or (3) dropping both tariffs and direct payments. Consider the first alternative where effective producer prices remain at P_s and U.S. output remains at Q''_s. With complete elimination of the tariff, internal market prices would fall to P_w. Imports would advance by an amount equal to the increase in purchases at lower prices along DD. This increase would be $Q_t - Q'_t$. Total imports then would be $Q_t - Q''_s$. To maintain P_s, the direct payment rate would increase to $P_s - P_w$. Tariff revenue (area A) would vanish. Producer payments then would have to be financed from sources other than tariff income.

Under the second alternative, U.S. wool output would drop to Q'_s as payments (area B) were abandoned. Imports would increase by $Q''_s - Q'_s$, market prices would remain constant, but U.S. producer incomes would fall. Tariff revenue would increase with the growth in imports.

Under the free trade alternative, imports would expand to $Q_t - Q_s$ with all buyers and sellers facing the international price of P_w. Grower

income would fall without the benefit of support payments and wool tariff revenues would be eliminated.

Empirical Estimates

The direct effects of dismantling U.S. wool protection are estimated and discussed in this section. To simplify the task, it is assumed that the United States produces only apparel wool, that prices on the Boston wool market represent national average wholesale raw wool prices, that Boston prices for Australian 64's-70's (clean basis, excluding duty) are a relevant international price indicator, and that the U.S. Department of Agriculture's "average price received by farmers for wool" accurately reflects U.S. producer prices obtained in the market. All calculations made in this section are based on aggregated 1966 data. Thus, the estimated effects are on the levels of price, output, and trade which actually prevailed *in 1966*.

To be sure, an aggregate analysis of this generality sidesteps many important and difficult problems of adjustment within a market as complex as that for wool. However, the overall picture is important, especially from the viewpoint of trade policy and negotiation.

Estimates of demand and supply elasticities are needed to analyze the impact of changes in tariff and support levels. Based on previous statistical research,[8] the price elasticity of demand for raw apparel wool in the United Sates is assumed to be —0·6. Some implications of changing this elasticity estimate are discussed later. Unfortunately, no reliable supply elasticity estimates for wool are available for the United States. Producer price stability, insured by the direct payments program, has precluded empirical estimation on the supply side. However, supply elasticity estimates for Australian wool were presented in a recently-published study.[9] They are +0·05 for the short run (one year) and +0·25 for the intermediate run (five years). In the absence of other evidence, these supply elasticities were applied to U.S. production figures for purposes of estimation.[10]

Table 1 contains the relevant data used in this analysis. With these data and the assumed elasticities, consider first the impact which would have occurred in 1966 had the United States completely dropped its raw wool tariff but retained domestic price support to growers at 58·0 cents per pound (greasy basis). Assume that only the raw wool tariff is dropped. In this case, U.S. production would have remained unchanged.

[8] C. E. Ferguson and M. Polasek estimated this coefficient at —0·56 in "The Elasticity of Import Demand for Raw Apparel Wool in the United States", *Econometrica*, Vol. 30, p. 677, October 1962. In an earlier paper, F. B. Horner estimated a prewar range of —0·4 to —0·6 in "Elasticity of Demand for Exports of a Single Country", *Review of Economics and Statistics*, Vol. 34, p. 334, November 1952. For this paper, —0·6 was chosen because, if anything, the demand for raw wool has become more price elastic over time as competition from synthetic fibres has intensified.

[9] F. H. Gruen, L. E. Ward, and A. Powell, "Changes in Supply of Agricultural Products", in D. B. Williams (Ed.) *Agriculture in the Australian Economy*, Sydney University Press, 1967, p. 169.

[10] These Australian supply elasticity estimates are consistent with a range in supply elasticity of 0 to +0·2 for United States assumed earlier by Horner, *op.cit.*, p. 334. For a discussion of the unresponsiveness of wool production to price change, see K. O. Campbell, "The Inelasticity of Supply of Wool", *The Economic Record*, Vol. 31, pp. 311-318, December 1955.

The entire change in quantity demanded would have come from increased imports as market prices dropped from 134·9 cents per pound to 112·1 cents following the assumed tariff cut. This increase in consumption (and imports), corresponds to $Q_t - Q'_t$ in Figure 1. It would have been about 29·0 million pounds (clean basis) in 1966, an increase of 18 per cent in U.S. raw apparel wool imports.

Assuming that Australia would have retained its 40 per cent share of total U.S. imports, this policy change would have meant an increase of 11·6 million pounds of raw wool (clean basis) in exports to the United States. At the 1965/66 rate of conversion of clean wool to greasy wool of 1·73, this amounts to 20·1 million pounds of greasy wool, an 18 per cent increase in U.S.-bound shipments from Australia. Valuing this increase at 50 cents per pound, the boost in export earnings from the United States would have been $10·0 million or about 1·2 per cent of the total value of Australia's 1966 wool exports. If Australia failed to capture 40 per cent of the increase in U.S. imports or succeeded in obtaining more, then the results would change proportionately. These computations suggest only the *potential* increase in Australian trade with United States. The implicit assumption here is that additional wool supplies for the U.S. market would be available without an international price increase.

TABLE 1

Data Used in Analyses, 1966

Item	Amount
Quantities	
1. U.S. wool production	123 mil. lb (clean basis)—
	250 mil. lb (greasy basis)
2. Apparel wool imports	163 mil. lb (clean basis)
3. Imports from Australia	65 mil. lb (clean basis)—
	112 mil. lb (greasy basis)
Prices[a]	
4. Australian 64's-70's (Boston)	112·1 cents per lb (clean basis)
5. Import duty	22·8 cents per lb (clean basis)
6. Total U.S. price,	
duty paid: (4) + (5)	134·9 cents per lb (clean basis)
7. Support price to U.S. producers	58·0 cents per lb (greasy basis)
8. Market price received by	
U.S. producers	45·5 cents per lb (greasy basis)
9. Direct payment: (7) — (8)	12·5 cents per lb (greasy basis)
10. Sydney wool price	50 cents per lb (greasy basis)
11. Total value, Australian wool exports	$801 million (export basis)

[a] Monetary values expressed in Australian currency ($A 1.00 = $US 1.12).

The loss in tariff revenue to the U.S. government as a result of this policy change would have been about $37 million in 1966. At the same time, payments to growers to sustain the 58 per cent support rate would have increased from 12·5 cents to 23·4 cents per pound (greasy basis).[11] Hence, apart from the usual difficulties encountered from domestic interests as tariff protection is cut, this policy change would have faced

[11] This increase, about 10·9 cents per pound, corresponds to the greasy weight equivalent of the 22·8 cent tariff rate on clean wool.

additional political hurdles. The U.S. wool price support program, financed as it is out of tariff proceeds, is virtually self-sustaining. Abandoning the tariff would mean that the total value of the larger payments, about $58 million, would have had to come from funds other than wool tariffs. Such additional funds would be difficult to find in current U.S. agricultural budgets.

All of this is cast in a partial equilibrium framework with no indirect effects taken into account. For example, this increase in U.S. raw wool consumption (and imports) would have been partly at the expense of imported manufactured woollen products. Thus, some of Australia's direct gain in wool exports to the United States, might have been offset by lower wool sales to nations which manufacture woollen goods for the U.S. market. Similarly, changes in tariff rates for woollen manufactures were not considered explicitly. Alterations in the duty schedule for these products no doubt would have indirect effects on Australia's total wool exports. However, analysis of these and related questions is beyond the scope of this paper.

In reality, it often is not possible for nations to negotiate full tariff cuts on commodities for immediate application. Hence, the effect of a partial U.S. tariff cut may be of interest. For each 10-cent cut in the U.S. raw wool tariff, Australian exports would have increased by 8·8 million pounds (greasy basis) or by $4·4 million in 1966.

The consequences of a change in the assumed demand elasticity also may be of interest. For each 0·1 absolute change in this coefficient, Australian raw wool exports to the United States would have changed in the same direction by 3 million pounds (greasy basis) or by $1·5 million in 1966. Therefore, even substantial changes in the assumed demand elasticity do not change the relative magnitudes greatly from Australia's point of view.

Now consider the impact on production and trade if, leaving the tariff intact, U.S. policy-makers had decided in 1966 to discontinue direct payments to domestic wool producers, another politically difficult move. Prices faced by producers would have fallen from the 58·0-cent support level to about 45·5 cents per pound (greasy basis). Using short- and intermediate-run supply elasticities of +0·05 and +0·25 respectively, U.S. production in 1966 would have dropped 2·7 million pounds (greasy basis) after one year and 13·5 million pounds after five years, all else remaining constant. Based on a conversion rate of clean wool to greasy wool of 2·09 for the U.S., these computations indicate that raw wool imports would have increased about 1·3 million pounds (clean basis) after one year and about 6·5 million pounds after five years. The latter figure is 4 per cent of 1966 U.S. raw apparel wool imports. These changes correspond with $Q''_s - Q'_s$ in Figure 1.

If Australia would have retained its current market share, this change would have increased wool exports to the United States 0·9 million pounds (greasy basis) or about $450 thousand in the first year. After five years, the increase in U.S.-bound exports would be 4·5 million pounds (greasy basis) worth $2·2 million at 1966 prices. This five-year increase is about 4 per cent of the 1966 level of Australian wool shipments to the United States. The increase in Australian wool export earnings solely attributable to dropping payments to U.S. wool growers

would amount to 0·3 per cent of 1966 earnings after a five-year adjustment period.

Following the same line of argument, it appears that for each 10-cent change in direct payments per pound of wool (greasy basis), Australian wool export earnings from the United States would have changed in the opposite direction about $360 thousand after one year and $1·8 million after five.

Even though the U.S. wool supply is probably highly price-inelastic in the short-run, might it be argued that lowering support payments to U.S. wool producers would stimulate a long-run shift of resources into beef production which would compete, in turn, with Australian beef? Approximately 80 per cent of U.S. shorn wool is produced in the range areas of several western, southwestern, and north central states. It is here that modest resource shifts probably would occur in response to lower wool prices. Although the best alternative to sheep in these areas is feeder cattle, the competition which increased feeder cattle output would bring to bear on meat imports is not likely to be large.

Typically, feeder cattle move off the range into midwestern and western feed lots for finishing as calves and yearlings. The resulting additional output of grain-fed beef would not compete directly with the lean beef supplied by Australia and several other nations. However, cull cows from the breeding herds which replace sheep *would* compete directly. But for each 100 ewes removed from range areas about 14 beef cows can be added. From these 14 cows, only two or three will be culled annually for slaughter, and this after a two- or three-year lag. Moreover, the U.S. demand for lean beef is growing rapidly enough to absorb these potential supplies without materially affecting import demand.

Next consider the overall impact on production and trade of a full return to free trade in wool by the United States. This involves the effects of both eliminating the tariff and abandoning direct payments. The tariff effects are as indicated above. However, discontinuing the direct payment scheme means that producer prices must drop to a level consistent with world prices. Domestic production would fall by an amount corresponding to $Q''_s - Q_s$ in Figure 1. In 1966, the producer price decrease under a free trade regime would have been about 23·4 cents per pound (greasy basis) of which 12·5 cents is the 1966 direct payment and 10·9 cents is the greasy weight equivalent of the tariff.

Following a similar line of argument as before, the increase in U.S. wool imports under free trade can be estimated and Australia's 40 per cent share calculated. Without presenting all of the intermediate calculations, the data in Table 2 summarize the impact on Australia of a free trade wool policy by the United States.

The bulk of this increase is in response to the assumed tariff cut, *viz.* 20·1 million pounds in each of the three periods. In this tabulation the demand elasticity was held at —0·6 throughout. However, it is reasonable to suppose that for a period as long as five years, the relevant demand elasticity might be substantially larger, in absolute terms, than —0·6.

If a longer-run demand elasticity for U.S. raw wool as high as —1·0 is assumed, then the total increase in Australian exports to the United States would be on the order of 41·8 million pounds (greasy basis),

worth about $20·9 million. This would amount to a 2·6 per cent increase in export earnings from the United States over the 1966 level.

TABLE 2

Impact on Australian Raw Wool Exports to United States in 1966 if Both Tariffs and Direct Payments to U.S. Growers were Eliminated

	Increase in wool exports to U.S. (greasy basis)	Value of increase at 1966 prices Sydney	Percentage of 1966 exports to U.S.	Percentage of 1966 wool earnings
	million lb	$ million	percent	percent
Immediately	20·1	10·0	18	1·2
After 1 year	21·8	10·9	19	1·4
After 5 years	28·5	14·2	25	1·8

Concluding Comments

In general, changes in U.S. tariff and support policies on wool toward freer trade would increase Australia's exports to the United States substantially. However, the value of relaxation in trade barriers is small relative to overall Australian export earnings from wool. The annual increase in Australia–United States wool trade directly attributable to a free trade policy by the United States lies between $10 million and $21 million depending upon the assumptions made. Most of the trade increase would be the result of tariff cuts, with only slight increases due to elimination of support payments to U.S. wool producers. Such increases are surely worth negotiating for but could not, in themselves, solve the underlying difficulties faced by the wool industry. Liberalization of U.S. wool policy faces the usual political problems which are compounded by the fact that the price support program is linked directly to wool tariff revenues.

This analysis is based on a static view of the wool market at 1966 levels. The indicated changes in production and trade are to be regarded as the direct result of the specified changes in U.S. policy. In addition, these estimates refer only to the direct trade relationships in wool between Australia and the United States. Adjustments with third countries or with other commodities resulting from a U.S. wool policy change are not covered. Moreover, these estimates are exclusive of other influences such as general demand growth, secular changes in U.S. sheep numbers, developments in synthetic fibre industries, trends in international wool prices, etc. In a dynamic market these other factors may override and obscure the pure effects of change in tariffs and trade policies.